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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/773,789

02/06/2004

Bhupender S. Minhas

PEP-0404

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08/29/2006

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EXAMINER

MENON, KRISHNAN S

ART UNIT

PAPER NUMBER

1723

DATE MAILED: 08/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

#11

<b>Office Action Summary</b>	<b>Application No.</b> 10/773,789	<b>Applicant(s)</b> MINHAS ET AL.	
	<b>Examiner</b> Krishnan S. Menon	<b>Art Unit</b> 1723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 August 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-30 and 36-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 and 36-41 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

Claim 1-30 and 36-41 are pending as amended 8/16/06.

#### ***Information Disclosure Statement***

The information disclosure statement filed 5/16/05 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. The non-English patents listed in the IDS have, therefore, been not considered, and crossed out.

Applicant is requested either to submit a concise explanation of their relevance or English translations for their consideration.

English abstracts or equivalents, where submitted (on 8/16/06), are separately considered.

#### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422

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F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

1. Claims 1,2 and 4-9 and 36-41 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1,2,4,6 and 16-19 of copending Application No. 10/947,019. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims in both applications recite same subject matter.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

2. Claims 10-30 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over the claims 1,2,4,6 and 16-19 of copending Application No. 10/947,019 and claims 1-13 of copending Application No. 11/369,613. The combination of the claims of the two applications would recite the claimed subject matter of the instant claims. It would be obvious to one of ordinary skill in the art at the time of invention to combine the claims of the '019 and '613 applications to arrive at the claims of the instant application; one of ordinary skill in the art would do so to recover acids and hydrocarbons from the feed mixture.

This is a provisional obviousness-type double patenting rejection.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1,3 and 4-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Lane et al (US 2,276,210).

Lane teaches a method of separating a mixture of hydrocarbons, sulfuric acid and water, having 80 or 92% acid, and 1-10% hydrocarbon (figures; page 2: column 1 lines 1-5, column 2 lines 32-66; page 3: column 1 lines 65-75) using a membrane to separate acid and water from the feed to the permeate while retaining the hydrocarbon in the retentate. The reference teaches that water may diffuse into the feed side during dialysis and recommend using higher than osmotic pressure to prevent this (see page 3, column 1, lines 6-25 of page 3, and page 4, column 1 lines 52-68), which could prevent diffusion of water into the feed stream. The first retentate (hydrocarbon phase at line 19) has substantially more hydrocarbon than the feed; both permeate streams (lines 32 and 33) have almost no hydrocarbon, or substantially all acid, as claimed. Please note that the claims, as amended 8/16/06, recite only separation between acid and hydrocarbon.

With respect to the concentration of the retentate and the permeate streams, the reference meets the limitations of claims 5-7 because the retentate retains all the hydrocarbons, thus having a greater concentration of hydrocarbons in the retentate

(hydrocarbon phase that exits line 19 in the figure) than the feed, and the permeate (at line 33 or 32) is almost all acid and water and no hydrocarbon (Especially with the second stage as seen in the figure and column 1 lines 52-68 of page 4).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1,2,4-10,14-21, 27-30 and 36-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kozak et al (US 6,183,648) in view of Lane.

Kozak teaches a membrane process for recovery of sulfuric acid (column 6 line 51 – column 7 line 62) from the process of sulfonating alkyl naphthalenes (column 4 lines 43-46), permeate containing acid and water, retentate containing the hydrocarbon compounds. Membrane used is PVA or cross-linked PVA – see the references to Linder incorporated by reference by Kozak in column 7 lines 50-62, particularly, US 4,767,645 or US 4,833,014. Secondary process of water reduction – column 10 lines 13-60. Sulfuric acid concentrated by adding oleum – column 2 lines 60-67. Second retentate being used in alkylation process is an intended use of the product, and is not patentable. A claim containing a “recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus” if the prior art apparatus teaches all the structural

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limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). the purpose or intended use of the claimed invention must be evaluated to determine whether the recited purpose or intended use results in a structural difference (or, in the case of process claims, manipulative difference) between the claimed invention and the prior art. If so, the recitation serves to limit the claim. See, e.g., *In re Otto*, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963). Kozak also recycles the acid as claimed (column 10 lines 56-60).

Instant claims differ from the teaching of Kozak in the concentration of the feed stream. Lane teaches such concentration of feed streams in a similar process. It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of Kozak to process the feed stream of Lane because the essential difference in the feed stream is of acid concentration; Lane teaches that the membrane must withstand the acid, and Kozak's membrane would withstand the acid – see column 7 lines 45-61. Regarding claim 28, Lane also teaches that the dilute acid may be concentrated by any of the well-known process; evaporation to concentrate is a well-known process.

Claims 5-7 and 19-21 differ from the teaching of Kozak in view of Lane in the recitation of the concentrations of the retentate and permeate streams. However, these could be optimized, based on the inherent properties of flux and the selectivity of the membrane, and the purity and through put required. Discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. *In re Boesch and Slaney*, 205 USPQ 215 (CCPA 1980); *In re Antonie*, 559 F.2d 618, 195

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USPQ 6 (CCPA 1977); “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

In the newly added claims 36-41 (8/16/06), ratio of acid to water in the permeate can be greater than that of the feed: Kozak teaches “... the sulfuric acid solution can be concentrated and returned to the sulfonation zone to be mixed with oleum to raise the strength to that required for sulfonation..” in a membrane process in column 2 lines 49-67. The reference does not specifically say if the permeate in the first stage (like nanofiltration) would have a higher ratio of acid/water when compared to the feed; however, since the reference uses the same or similar type of membrane, it would be considered to inherently do so. Under the principles of inherency, if a prior art device, in its normal and usual operation, would necessarily perform the method claimed, then the method claimed will be considered to be anticipated by the prior art device. When the prior art device is the same as a device described in the specification for carrying out the claimed method, it can be assumed the device will inherently perform the claimed process. In re King, 801 F.2d 1324, 231 USPQ 136 (Fed. Cir. 1986). Also see column 10 lines 13-61: the electrodialysis process is described as separating acid from water and organic components to a concentration of 50-80% acid, which would read on to this limitation.



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5. Claims 11-13, 22-25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kozak in view of Lane as applied to claim 10 above, and further in view of Cole (US 3,963,567).

Claims 11-13, 25 and 26 differ from the teaching of Kozak in view of Lane in the recitation of the membrane used. However, Kozak teaches that electrodialysis is a well-known process (column 10 lines 20-25). It is also known in the art that Nafion® membranes (perfluorinated ionomer membranes) are used in electrodialysis. For example, see Cole column 7 lines 51-67. Applicant also discloses that Nafion is well known in the art, and that the formula of claim 26 is that of Nafion (specification paragraph 24,-28). The first membrane is formed from PVA and cross-linked PVA as shown by the incorporated references in Kozak (column 7 lines 50-62), and applicant admits that PVA gets sulfated to form PVS in sulfuric acid (paragraph 29 of specification). Therefore, the instant claims are not patentable.

Claims 22-24 differ from Kozak in view of Lane and Cole in the recitation of the concentrations of the retentate and permeate streams. However, these could be optimized, based on the inherent properties of flux and the selectivity of the membrane, and the purity and through put required. Discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. In re Boesch and Slaney, 205 USPQ 215 (CCPA 1980); In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977); "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

### ***Response to Arguments***

Applicant's arguments filed 8/16/06 have been fully considered but they are not persuasive.

The 37 CFR 1.132 declaration of Dr. Peiffer is only an opinion based on reading the Linder patents; there is no supporting evidence that the Linder membranes in fact are susceptible to degradation in presence of > 70% sulfuric acid.

With respect to the arguments about the Lane reference, the arguments are not commensurate in scope with the claims, because the separation claimed is between hydrocarbon and acid, as shown in the rejection. The permeate product of the Lane reference fits the applicant's definition of the permeate product.

With respect to the Kozak reference, arguments against anticipation are moot; new grounds for rejection. With respect to the argument that the membrane taught by Linder is not good for concentrated sulfuric acid, applicant's claims do not recite a membrane that is different from the Kozak teaching to overcome the reference. Applicant also has not shown with any evidence that the Kozak membrane would not work for the intended purpose.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S. Menon whose telephone number is 571-272-1143. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on 571-272-1151. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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8/23/06

Krishnan S Menon  
Examiner  
Art Unit 1723